ADSORPTION OF METHYLENE BLUE BY ACTIVATED CARBON
PREPARED FROM WASTE TIRE POWDER

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Nowadays, waste tires disposal had become a great issue in the world. There are also many problems arise from the disposal of waste tires. However, from the environmental and economical points of view, a better solution is to convert such waste into valuable products which are pyrolysis oil and activated carbon. Likewise, the activated carbon can also be used in air pollution control and wastewater treatment. Therefore this study was carried out to identify a suitable activation method for preparing a better quality activated carbon. There were two methods had been chosen in this study which are microwave steam activation and zinc chloride activation. The adsorption of methylene blue onto the activated carbons was characterized and investigated. The BET surface area for Z-AC was the highest (288 m²/g) compared to the other two samples, as well as the percentage of yield (91.2%), due to the presence of ZnCl₂ in activation. The equilibrium adsorption capacity for Z-AC was 154 mg/g while that of MW-AC and recycled Z-AC were 82mg/g and 60 mg/g respectively. On the other hand, the adsorption of methylene blue was influenced by the initial concentrations. As the initial concentrations increased, the rates of the adsorption were decreased. Besides, Langmuir isotherm was well-fitted with the adsorption of methylene blue compared to Freundlich isotherm. The adsorption of methylene blue was also fitted with pseudo-second order compared to pseudo-first order model.
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